

Evaluation of Layered Residual Herbicide Programs in Enlist Soybean (Brooklyn, WI 2023)

Trial Information

Trial Sponsor(s): BASF, Corteva, FMC, Syngenta, UPL, Valent

Objective: Evaluate multiple two-pass herbicide programs with layered residuals for season-long waterhemp control in Enlist soybean

Crop: Enlist Soybean

Variety: P10A66E

Weed species (pressure): glyphosate-R waterhemp (moderate)
woolly cupgrass (high)

Herbicide Application(s): PRE – 5/17
POST – 6/22 (V4/V5 soybean)

For the full report see trial #23-BRO-SB10 in the [2023 Wisconsin Weed Science Research Report](#)



Evaluation of Layered Residual Herbicide Programs in Enlist Soy

Trt #		Herbicide (rate acre ⁻¹)	Injury (%)		Waterhemp (%)				Woolly Cupgrass (%)				Yield ^b bu acre ⁻¹	
			6/8	7/5	6/8	6/22	7/5	10/3	6/8	6/22	7/5	10/3		
1, 24		Untreated Check	0	0	0	0	0	0	0	0	0	0	24 d	
2	Sonic (5 oz)	PRE (5/17)	POST (6/22)						POST				POST	
3		Enlist One (32 oz) + Liberty (32 oz) + AMS*	0.8	4.3	97	72	96	89	65	54	96	95	62 ab	
4		Enlist One (32 oz) + Liberty (32 oz) + EverpreX (1 pt) + AMS*	0.5	5.0	98	85	95	95	70	64	98	99	61 abc	
5		Enlist One (32 oz) + Roundup PM3 (30 oz) + AMS*	1.0	2.0	100	66	92	97	68	58	100	100	64 a	
6		Enlist One (32 oz) + Roundup PM3 (30 oz) + EverpreX (1 pt) + AMS*	1.0	4.0	98	71	96	96	74	69	100	100	59 abc	
7		Enlist One (32 oz) + Liberty (32 oz) + Roundup PM3 (20 oz) AMS*	2.3	3.8	95	83	97	93	76	64	98	96	62 ab	
8		Enlist One (32 oz) + Liberty (32 oz) + Roundup PM3 (20 oz) + EverpreX (1 pt) + AMS*	0.8	5.0	95	86	99	97	72	76	98	98	60 abc	
9	Fierce EZ (6 oz)	Enlist One (32 oz) + Perpetuo (6 oz) + Select Max (9 oz) + NIS 0.25% v/v + AMS*	9.0	8.5	100	89	95	99	83	67	81	68	55 abc	
10		Liberty (32 oz) + Perpetuo (6 oz) + Select Max (9 oz) + NIS 0.25% v/v + AMS*	9.5	8.5	100	97	100	97	77	60	100	99	61 abc	
11	Fierce MTZ (1 pt)	Enlist One (32 oz) + Perpetuo (6 oz) + Select Max (9 oz) + NIS 0.25% v/v + AMS*	9.5	10.5	100	98	96	94	73	53	78	66	53 bc	
12		Liberty (32 oz) + Perpetuo (6 oz) + Select Max (9 oz) + NIS 0.25% v/v + AMS*	9.0	9.0	100	93	99	99	81	63	99	98	58 abc	
13	Fierce XLT (3.75 oz)	Enlist One (32 oz) + Perpetuo (6 oz) + Select Max (9 oz) + NIS 0.25% v/v + AMS*	7.0	9.3	100	99	97	99	68	51	75	63	52 c	
14		Liberty (32 oz) + Perpetuo (6 oz) + Select Max (9 oz) + NIS 0.25% v/v + AMS*	4.8	0.0	100	90	98	92	73	48	100	99	59 abc	
15	Authority Supreme (6.5 oz)	Enlist One (32 oz) + Liberty (32 oz) + Anthem Maxx (2.5 oz) + AMS*	2.8	10.3	100	77	98	93	76	66	97	93	61 abc	
16	Zidua PRO (6 oz)	Enlist One (32 oz) + Liberty (32 oz) + Anthem Maxx (3 oz) + AMS*	3.8	12.3	100	91	100	99	77	71	98	93	57 abc	
17		Liberty (32 oz) + Dual II Magnum (1.33 pt) + AMS*	2.5	4.8	100	91	95	94	85	83	99	98	61 abc	
18	Moccasin MTZ (2.67 pt)	Liberty (32 oz) + Zidua SC (2.5 oz) + AMS*	4.5	4.8	100	92	99	97	82	78	100	98	60 abc	
19	Preview 2.1SC (21 oz)	InterMoc (64 oz) + AMS*	0.5	1.0	100	96	98	95	77	60	100	98	60 abc	
21		InterMoc (64 oz) + Velexi (12.8 oz) + AMS*	0.0	3.5	100	86	96	91	79	73	99	97	59 abc	
20	Preview 2.1SC (21 oz) + Moccasin (1.1 pt)	InterMoc (64 oz) + AMS*	0.0	3.5	100	98	99	95	85	59	99	98	60 abc	
22	Tendovo (2.1 qt)	Enlist One (32 oz) + Roundup PM3 (26 oz) + Dual II Magnum (1.25 pt) + AMS*	3.3	4.8	100	94	99	99	87	79	99	98	63 ab	
23	Prefix (2.5 pt) + Metricor DF (8 oz)	Enlist One (32 oz) + Roundup PM3 (26 oz) + Dual II Magnum (1.5 pt) + AMS*	4.3	5.5	100	92	98	99	91	96	100	100	64 a	
			LSD ($\alpha=0.10$)	1.9	1.4	ns	ns	3	5	10	21	2	4	5
			p value	<.001	<.001	0.588	0.142	0.02	<.001	0.003	0.008	<.001	<.001	<0.001

^aVisual control from 70-100% is illustrated on a color scale with green representing greater weed control values.

^bYield values with the same letter are not significantly different.

*Spray grade AMS applied at 3 lb/a.

Evaluation of Layered Residual Herbicide Programs in Enlist Soybean (Brooklyn, WI 2023)

Plot pictures taken on 6/8
22 days after the PRE application

The numbers in the upper right-hand corner are the average % waterhemp and woolly cupgrass control of 4 replications

22 days after PRE (6/8)
Untreated Check

0%



22 days after PRE (6/8)
PRE: 5 oz Sonic

Waterhemp = 97%
Woolly Cupgrass = 71%



22 days after PRE (6/8)
PRE: 6 oz Fierce EZ

Waterhemp = 100%
Woolly Cupgrass = 80%



22 days after PRE (6/8)
PRE: 1 pt Fierce MTZ

Waterhemp = 100%
Woolly Cupgrass = 77%



22 days after PRE (6/8)
PRE: 3.75 oz Fierce XLT

Waterhemp = 100%
Woolly Cupgrass = 71%



22 days after PRE (6/8)
PRE: 6.5 oz Authority Supreme

Waterhemp = 100%
Woolly Cupgrass = 76%



**22 days after PRE (6/8)
PRE: 7 oz Authority Edge**

**Waterhemp = 94%
Woolly Cupgrass = 77%**



22 days after PRE (6/8)
PRE: 6 oz Zidua PRO

Waterhemp = 100%
Woolly Cupgrass = 84%



22 days after PRE (6/8)
PRE: 2.67 pt Moccasin MTZ

Waterhemp = 100%
Woolly Cupgrass = 77%



22 days after PRE (6/8)
PRE: 21 oz Preview 2.1SC

Waterhemp = 99%
Woolly Cupgrass = 75%



22 days after PRE (6/8)
PRE: 21 oz Preview 2.1SC + 1.1 pt Moccasin

Waterhemp = 100%
Woolly Cupgrass = 85%



22 days after PRE (6/8)
PRE: 2.1 qt Tendovo

Waterhemp = 100%
Woolly Cupgrass = 87%



22 days after PRE (6/8)
PRE: 2.5 pt Prefix + 8 oz Metricor DF

Waterhemp = 100%
Woolly Cupgrass = 91%



Evaluation of Layered Residual Herbicide Programs in Enlist Soybean (Brooklyn, WI 2023)

Plot pictures taken on 6/22

36 days after the PRE application
The day of the POST application

The numbers in the upper right-hand corner are the average % waterhemp and woolly cupgrass control of 4 replications

36 days after PRE (6/22)

Untreated Check

0%



36 days after PRE (6/22)

PRE: 5 oz Sonic

Waterhemp = 77%
Woolly Cupgrass = 64%



36 days after PRE (6/22)

PRE: 6 oz Fierce EZ

Waterhemp = 93%
Woolly Cupgrass = 64%



36 days after PRE (6/22)

PRE: 1 pt Fierce MTZ

Waterhemp = 96%
Woolly Cupgrass = 58%



36 days after PRE (6/22)

PRE: 3.75 oz Fierce XLT

Waterhemp = 95%
Woolly Cupgrass = 50%



36 days after PRE (6/22)
PRE: 6.5 oz Authority Supreme

Waterhemp = 77%
Woolly Cupgrass = 66%



36 days after PRE (6/22)
PRE: 7 oz Authority Edge

Waterhemp = 91%
Woolly Cupgrass = 71%



36 days after PRE (6/22)

PRE: 6 oz Zidua PRO

Waterhemp = 92%
Woolly Cupgrass = 81%



36 days after PRE (6/22)
PRE: 2.67 pt Moccasin MTZ

Waterhemp = 96%
Woolly Cupgrass = 60%



36 days after PRE (6/22)
PRE: 21 oz Preview 2.1SC

Waterhemp = 91%
Woolly Cupgrass = 54%



36 days after PRE (6/22)

PRE: 21 oz Preview 2.1SC + 1.1 pt Moccasin

Waterhemp = 98%

Woolly Cupgrass = 59%



36 days after PRE (6/22)
PRE: 2.1 qt Tendovo

Waterhemp = 94%
Woolly Cupgrass = 79%



36 days after PRE (6/22)

PRE: 2.5 pt Prefix + 8 oz Metricor DF

Waterhemp = 92%

Woolly Cupgrass = 96%



Evaluation of Layered Residual Herbicide Programs in Enlist Soybean (Brooklyn, WI 2023)

Plot pictures taken on 7/5

49 days after the PRE application
13 days after the POST application

The numbers in the upper right-hand corner are the average % waterhemp and woolly cupgrass control of 4 replications

49 days after PRE (7/5)
Untreated Check

0%



13 days after POST (7/5)

PRE: 5 oz Sonic *fb*

POST: 32 oz Enlist One + 32 oz Liberty + AMS

Waterhemp = 96%

Woolly Cupgrass = 96%



13 days after POST (7/5)

PRE: 5 oz Sonic *fb*

POST: 32 oz Enlist One + 32 oz Liberty + 1 pt EverpreX + AMS

Waterhemp = 95%

Woolly Cupgrass = 98%



13 days after POST (7/5)

PRE: 5 oz Sonic *fb*

POST: 32 oz Enlist One + 30 oz Roundup PM3 + AMS

Waterhemp = 92%

Woolly Cupgrass = 100%



13 days after POST (7/5)

PRE: 5 oz Sonic *fb*

POST: 32 oz Enlist One + 30 oz Roundup PM3 + 1 pt EverpreX + AMS

Waterhemp = 96%

Woolly Cupgrass = 100%



13 days after POST (7/5)

PRE: 5 oz Sonic *fb*

POST: 32 oz Enlist One + 32 oz Liberty + 20 oz Roundup PM3 + AMS

Waterhemp = 97%

Woolly Cupgrass = 98%



13 days after POST (7/5)

PRE: 5 oz Sonic *fb*

POST: 32 oz Enlist One + 32 oz Liberty + 20 oz RU PM3 + 1 pt EverpreX + AMS

Waterhemp = 99%

Woolly Cupgrass = 98%



13 days after POST (7/5)

PRE: 6 oz Fierce EZ fb

POST: 32 oz Enlist One + 6 oz Perpetuo + 9 oz Select Max + NIS + AMS

Waterhemp = 95%

Woolly Cupgrass = 81%



13 days after POST (7/5)

PRE: 6 oz Fierce EZ fb

POST: 32 oz Liberty + 6 oz Perpetuo + 9 oz Select Max + NIS + AMS

Waterhemp = 100%

Woolly Cupgrass = 100%



13 days after POST (7/5)

PRE: 1 pt Fierce MTZ fb

POST: 32 oz Enlist One + 6 oz Perpetuo + 9 oz Select Max + NIS + AMS

Waterhemp = 96%

Woolly Cupgrass = 78%



13 days after POST (7/5)

PRE: 1 pt Fierce MTZ *fb*

POST: 32 oz Liberty + 6 oz Perpetuo + 9 oz Select Max + NIS + AMS

Waterhemp = 99%

Woolly Cupgrass = 99%



13 days after POST (7/5)

PRE: 3.75 oz Fierce XLT *fb*

POST: 32 oz Enlist One + 6 oz Perpetuo + 9 oz Select Max + NIS + AMS

Waterhemp = 97%

Woolly Cupgrass = 75%



13 days after POST (7/5)

PRE: 3.75 oz Fierce XLT *fb*

POST: 32 oz Liberty + 6 oz Perpetuo + 9 oz Select Max + NIS + AMS

Waterhemp = 98%

Woolly Cupgrass = 100%



13 days after POST (7/5)

Waterhemp = 98%

PRE: 6.5 oz Authority Supreme *fb*

Woolly Cupgrass = 97%

POST: 32 oz Enlist One + 32 oz Liberty + 2.5 oz Anthem Maxx + AMS



13 days after POST (7/5)
PRE: 7 oz Authority Edge fb
POST: 32 oz Enlist One + 32 oz Liberty + 3 oz Anthem Maxx + AMS

Waterhemp = 100%
Woolly Cupgrass = 98%



13 days after POST (7/5)

PRE: 6 oz Zidua PRO fb

POST: 32 oz Liberty + 1.33 pt Dual II Magnum + AMS

Waterhemp = 95%

Woolly Cupgrass = 99%



13 days after POST (7/5)

PRE: 6 oz Zidua PRO fb

POST: 32 oz Liberty + 2.5 oz Zidua SC + AMS

Waterhemp = 99%

Woolly Cupgrass = 100%



13 days after POST (7/5)
PRE: 2.67 pt Moccasin MTZ *fb*
POST: 64 oz InterMoc + AMS

Waterhemp = 98%
Woolly Cupgrass = 100%



13 days after POST (7/5)
PRE: 21 oz Preview 2.1SC *fb*
POST: 64 oz InterMoc + AMS

Waterhemp = 95%
Woolly Cupgrass = 100%



13 days after POST (7/5)
PRE: 21 oz Preview 2.1SC fb
POST: 64 oz InterMoc + 12.8 oz Velexi + AMS

Waterhemp = 96%
Woolly Cupgrass = 99%



13 days after POST (7/5)

PRE: 21 oz Preview 2.1SC + 1.1 pt Moccasin *fb*

POST: 64 oz InterMoc + AMS

Waterhemp = 99%

Woolly Cupgrass = 99%



13 days after POST (7/5)

PRE: 2.1 qt Tendovo *fb*

POST: 32 oz Enlist One + 26 oz Roundup PM3 + 1.25 pt Dual II Magnum + AMS

Waterhemp = 99%

Woolly Cupgrass = 99%



13 days after POST (7/5)

Waterhemp = 98%

PRE: 2.5 pt Prefix + 8 oz Metricor DF *fb*

Woolly Cupgrass = 100%

POST: 32 oz Enlist One + 26 oz Roundup PM3 + 1.5 pt Dual II Magnum + AMS



Evaluation of Layered Residual Herbicide Programs in Enlist Soybean (Brooklyn, WI 2023)

Plot pictures taken on 10/3
2 days before soybean harvest

The numbers in the upper right-hand corner are the average % waterhemp and woolly cupgrass control of 4 replications

Soybean Harvest(10/3)

Untreated Check

0%



Soybean Harvest(10/3)

Waterhemp = 89%

PRE: 5 oz Sonic *fb*

Woolly Cupgrass = 95%

POST: 32 oz Enlist One + 32 oz Liberty + AMS



Soybean Harvest(10/3)

Waterhemp = 95%

PRE: 5 oz Sonic *fb*

Woolly Cupgrass = 99%

POST: 32 oz Enlist One + 32 oz Liberty + 1 pt EverpreX + AMS



Soybean Harvest(10/3)

Waterhemp = 97%

PRE: 5 oz Sonic *fb*

Woolly Cupgrass = 100%

POST: 32 oz Enlist One + 30 oz Roundup PM3 + AMS



Soybean Harvest(10/3)

Waterhemp = 96%

PRE: 5 oz Sonic *fb*

Woolly Cupgrass = 100%

POST: 32 oz Enlist One + 30 oz Roundup PM3 + 1 pt EverpreX + AMS



Soybean Harvest(10/3)

Waterhemp = 93%

PRE: 5 oz Sonic *fb*

Woolly Cupgrass = 96%

POST: 32 oz Enlist One + 32 oz Liberty + 20 oz Roundup PM3 + AMS



Soybean Harvest(10/3)

Waterhemp = 97%

PRE: 5 oz Sonic *fb*

Woolly Cupgrass = 98%

POST: 32 oz Enlist One + 32 oz Liberty + 20 oz RU PM3 + 1 pt EverpreX + AMS



Soybean Harvest(10/3)

Waterhemp = 99%

PRE: 6 oz Fierce EZ fb

Woolly Cupgrass = 68%

POST: 32 oz Enlist One + 6 oz Perpetuo + 9 oz Select Max + NIS + AMS



Soybean Harvest(10/3)

Waterhemp = 97%

PRE: 6 oz Fierce EZ fb

Woolly Cupgrass = 99%

POST: 32 oz Liberty + 6 oz Perpetuo + 9 oz Select Max + NIS + AMS



Soybean Harvest(10/3)

Waterhemp = 94%

PRE: 1 pt Fierce MTZ *fb*

Woolly Cupgrass = 66%

POST: 32 oz Enlist One + 6 oz Perpetuo + 9 oz Select Max + NIS + AMS



Soybean Harvest(10/3)

Waterhemp = 99%

PRE: 1 pt Fierce MTZ *fb*

Woolly Cupgrass = 98%

POST: 32 oz Liberty + 6 oz Perpetuo + 9 oz Select Max + NIS + AMS



Soybean Harvest(10/3)

Waterhemp = 99%

PRE: 3.75 oz Fierce XLT fb

Woolly Cupgrass = 63%

POST: 32 oz Enlist One + 6 oz Perpetuo + 9 oz Select Max + NIS + AMS



Soybean Harvest(10/3)

Waterhemp = 92%

PRE: 3.75 oz Fierce XLT fb

Woolly Cupgrass = 99%

POST: 32 oz Liberty + 6 oz Perpetuo + 9 oz Select Max + NIS + AMS



Soybean Harvest(10/3)

Waterhemp = 93%

PRE: 6.5 oz Authority Supreme *fb*

Woolly Cupgrass = 93%

POST: 32 oz Enlist One + 32 oz Liberty + 2.5 oz Anthem Maxx + AMS



Soybean Harvest(10/3)

Waterhemp = 99%

PRE: 7 oz Authority Edge *fb*

Woolly Cupgrass = 93%

POST: 32 oz Enlist One + 32 oz Liberty + 3 oz Anthem Maxx + AMS



Soybean Harvest(10/3)

Waterhemp = 94%

PRE: 6 oz Zidua PRO fb

Woolly Cupgrass = 98%

POST: 32 oz Liberty + 1.33 pt Dual II Magnum + AMS



Soybean Harvest(10/3)

PRE: 6 oz Zidua PRO fb

POST: 32 oz Liberty + 2.5 oz Zidua SC + AMS

Waterhemp = 97%

Woolly Cupgrass = 98%



Soybean Harvest(10/3)

Waterhemp = 95%

PRE: 2.67 pt Moccasin MTZ *fb*

Woolly Cupgrass = 98%

POST: 64 oz InterMoc + AMS



Soybean Harvest(10/3)
PRE: 21 oz Preview 2.1SC *fb*
POST: 64 oz InterMoc + AMS

Waterhemp = 85%
Woolly Cupgrass = 99%



Soybean Harvest(10/3)

Waterhemp = 91%

PRE: 21 oz Preview 2.1SC fb

Woolly Cupgrass = 97%

POST: 64 oz InterMoc + 12.8 oz Velexi + AMS



Soybean Harvest(10/3)

Waterhemp = 95%

PRE: 21 oz Preview 2.1SC + 1.1 pt Moccasin *fb*

Woolly Cupgrass = 98%

POST: 64 oz InterMoc + AMS



Soybean Harvest(10/3)

Waterhemp = 99%

PRE: 2.1 qt Tendovo *fb*

Woolly Cupgrass = 98%

POST: 32 oz Enlist One + 26 oz Roundup PM3 + 1.25 pt Dual II Magnum + AMS



Soybean Harvest(10/3)

Waterhemp = 99%

PRE: 2.5 pt Prefix + 8 oz Metricor DF *fb*

Woolly Cupgrass = 100%

POST: 32 oz Enlist One + 26 oz Roundup PM3 + 1.5 pt Dual II Magnum + AMS

